

Application No. 10/085,499
Response to Office Action of March 24, 2005

PU010044

Listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-20. (canceled)

21. (previously presented): A telephony protection device comprising:

a first stage having a first first-stage input connectable to a tip line of a telephony network, a second first-stage input connectable to a ring line of the telephony network, a first input resistance in series with said first first-stage input and defining a first first-stage output for the tip line, a second input resistance in series with said second first-stage input and defining a second first-stage output for the ring line, a singular spark gap provided across said first first-stage output and said second first-stage output, and dual secondary spark gaps connected in parallel with said singular spark gap and across said first first-stage output and said second first-stage output; and

a second stage having a first second-stage input connected to said first first-stage output, a second second-stage input connected to said second first-stage output, a first filter connected between said first second-stage input and a first second-stage output connectable to a telephony device for attenuating a transient voltage developed on the tip line by said singular spark gap, and a second filter connected between said second second-stage input and a second second-stage output connectable to the telephony device for attenuating a transient voltage developed on the ring line by said singular spark gap.

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22. (previously presented): The telephony protection device of claim 21, wherein said first and second input resistances of said first stage comprise fuse-resistors.
23. (previously presented): The telephony protection device of claim 21, wherein said first stage further comprises a first ferrite bead in series with said first input resistance and a second ferrite bead in series with said second input resistance.
24. (previously presented): The telephony protection device of claim 21, wherein said first stage further comprises a diode connected between said first first-stage output and said second first-stage output.
25. (previously presented): The telephony protection device of claim 21, wherein said singular spark gap and said dual secondary spark gaps are connected to ground.
26. (previously presented): The telephony protection device of claim 21, wherein said first filter of said second stage comprises a first inductor in series between said first second-stage input and said first second-stage output and a first capacitor connected between said first second-stage output and ground, and said second filter of said second stage comprises a second inductor in series between said second second-stage input and said second second-

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stage output and a second capacitor connected between said second second-stage output and ground.

27. (previously presented): A telephony protection device comprising:

a first stage having a first first-stage input connectable to a tip line of a telephony network, a second first-stage input connectable to a ring line of the telephony network, a first current limiter in series between said first first-stage input and a first first-stage output for the tip line, a second current limiter in series between said second first-stage input and a second first-stage output for the ring line, a singular spark gap provided across said first first-stage output and said second first-stage output, and dual secondary spark gap circuitry connected in parallel with said singular spark gap and across said first first-stage output and said second first-stage output; and

a second stage having a first second-stage input connected to said first first-stage output, a second second-stage input connected to said second first-stage output, first transient voltage filter circuitry connected between said first second-stage input and a first second-stage output connectable to a telephony device, and second transient voltage filter circuitry connected between said second second-stage input and a second second-stage output connectable to the telephony device.

28. (previously presented): The telephony protection device of claim 27, wherein said first and second current limiters respectively comprise first and second resistors.

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29. (previously presented): The telephony protection device of claim 27, wherein said dual secondary spark gap circuitry comprises series first and second secondary spark gaps.

30. (previously presented): The telephony protection device of claim 29, wherein said singular spark gap and said first and second secondary spark gaps are connected to ground.

31. (previously presented): The telephony protection device of claim 27, wherein said first stage further comprises a first ferrite bead in series with said first current limiter and a second ferrite bead in series with said second current limiter.

32. (previously presented): The telephony protection device of claim 27, wherein said first stage further comprises a diode connected between said first first-stage output and said second first-stage output.

33. (previously presented) The telephony protection device of claim 27, wherein said first transient voltage filter circuitry of said second stage comprises a first inductor connected in series between said first second-stage input and said first second-stage output and a first capacitor connected between said first second-stage output and ground, and said second transient voltage filter circuitry of said second stage comprises a second inductor in series

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between said second second-stage input and said second second-stage output and a second capacitor connected between said second second-stage output and ground.

34. (previously presented): A telephony protection device comprising:

a tip line input;

a ring line input;

a tip line resistor having a first tip line resistor end connected to said tip line input;

a ring line resistor having a first ring line resistor end connected to said ring line input;

a singular spark gap provided across a second tip line resistor end of said tip line resistor and a second ring line resistor end of said ring line resistor;

first and second secondary spark gaps disposed in series with respect to each other, in parallel with respect to said singular primary spark gap and across said first first-stage output and said second first-stage output;

a tip line filter adapted to attenuate voltage transients developed on the tip line by said primary spark gap and/or said first and second secondary spark gaps, said tip line filter connected between said second tip line resistor end and a tip line output that is connectable to a telephony device; and

a ring line filter adapted to attenuate voltage transients developed on the ring line by said singular primary spark gap and/or said first and second secondary spark gaps, said ring line filter connected between said second ring line resistor end and a ring line output that is connectable to the telephony device.

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35. (previously presented): The telephony device of claim 34, wherein said tip line and said ring line resistors each comprise a fuse-resistor.

36. (previously presented): The telephony protection device of claim 34, further comprising a first ferrite bead connected in series between said second tip line resistor end of said tip line resistor and said tip line filter, and a second ferrite bead connected in series between said second ring line resistor end of said ring line resistor and said ring line filter.

37. (previously presented): The telephony protection device of claim 34, further comprising a diode connected between said second tip line resistor end of said tip line resistor and said second ring line resistor end of said ring line resistor.

38. (previously presented): The telephony protection device of claim 34, wherein said singular spark gap and said first and second secondary spark gaps are connected to ground.

39. (previously presented): The telephony protection device of claim 34, wherein said tip line filter comprises a tip line inductor and a tip line capacitor, and said ring line filter comprises a ring line inductor and a ring line capacitor.